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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/648,855	08/26/2003	Paul Rudolf	121306.00002	8904

7590

05/26/2006

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EXAMINER
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HIRL, JOSEPH P

ART UNIT	PAPER NUMBER
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2129

DATE MAILED: 05/26/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/648,855

Applicant(s)

RUDOLF, PAUL

Examiner

Joseph P. Hirl

Art Unit

2129

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 26 August 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-72 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-72 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 02 June 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date A1, A2.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

### **DETAILED ACTION**

1. Claims 1-78 are pending in this application.

### ***Abstract Objection***

2. The abstract contains reference elements but no reference figure. The reference elements typically are required in a PCT filing but are not appropriate for the national stage or US filing. Such reference elements must be removed.

### ***Inventor Objection***

3. The specification under the section entitled "Brief Summary of the Invention" @ page 19, lines 25-27 and page 20, lines 1-2 cites the following:

Use of Kirchhoff wave equation: The present invention makes use of the Kirchhoff wave equation in the manner described by the inventor in "Computer modeling wave propagation with a variation of the Helmholtz-Kirchhoff relation," Applied Optics, Vol 29, No. 7, 1 March 1990, to interpret the data within binary files on a digital computer as the discretized values of complex wave fields.

This article is prior art to this invention and identifies Jeffrey J. Tollett and Rebecca R. McGowan as equal contributors. The prior art in the abstract states:

We have employed a variation of the Helmholtz-Kirchhoff equation to computer model a wide range of diffracting systems.

On this bases, Tollett and McGowan must be identified as inventors on the instant application.

***Specification Objection***

4. The specification @ page 19, lines 14-17 cites the following:

With an appropriate choice of an invertible association function that displays the distributive property over addition, the present invention is shown to avoid erroneous retrievals of stored data, a crucial capability for any associative memory system

The specification @ page 34, lines 22-24 cites the following:

The associative memory and device disclosed herein is able to define the association of two or more inputs as the forming of some invertible mathematical relation between them.

In the specification, pages 35-107, the term "invertible" is not further recited. Since the applicant references "some invertible mathematical relation" and acknowledges the requirement to make an "appropriate choice" is crucial to the invention's operation but does not disclose the how of identifying such invertible mathematical relation, it can only be concluded that such efforts will require undue experimentation on the part of one of ordinary skill in the art ... if such invertible mathematical relation can be found at all. The specification is objected to as having no utility since the appropriate disclosure has not been made.

5. The specification @ page 36, line 6, (also @ page 40, lines 19-20, page 65, lines 24-25) cites the following:

... $\alpha_m$  is an arbitrary weighting factor for the  $m^{\text{th}}$  association.

If  $\alpha_m$  is zero, C, the operator of equation 5 will be zero, If  $\alpha_m$  is either  $+\infty$  or  $-\infty$ , the operator C is undefined. Hence, the invention does not work and has no utility.

6. The specification @ page 77, lines 26-27 cites the following:

In this fashion, the present invention allows for a completely general and arbitrary set of responses to identification.

This effectively states that the invention accomplishes nothing and has no utility since the output is independent of the input ... the output is arbitrary ... whatever you want.

***Claim Rejections - 35 USC § 101***

7. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claims 1-78 are rejected under 35 U.S.C. § 101 for nonstatutory subject matter. The computer system must set forth a practical application of § 101 judicial exception to produce a real-world result. *Benson*, 409 U.S. at 71-72, 175 USPQ at 676-77. The invention is ineligible because it has not been limited to a substantial practical application. A solution transforms the input information, adapted to propagate the wave-modeled input, create one of a plurality of associations, store arbitrary linear combinations, transform the prompt, input information comprising physical or electronic stimuli, assign phase information are examples that are useless in a real world situation.

In determining whether the claim is for a “practical application,” the focus is not on whether the steps taken to achieve a particular result are useful, tangible, and concrete, but rather that the final result achieved by the claimed invention is useful, tangible and concrete. If the claim is directed to a practical application of the § 101 judicial exceptions producing a result tied to the physical world that does not preempt

the judicial exception, then the claim meets the statutory requirement of 35 U.S. C. § 101.

The phrases “accepting a set of or plurality of sets of input information,” “input buffer being further adapted to propagate the wave-modeled input data” and “cortex being further adapted to associate the desired sets of wave-modeled input data through an invertible mathematical function or operation” are not clear in its purpose or scope.

The invention must be for a practical application and either:

- 1). specify transforming (physical thing – article) or
- 2). have the Final Result (not the steps) achieve or produce a  
useful (specific, substantial and credible),  
concrete (substantially repeatable / non unpredictable), and  
tangible (real world / non abstract) result  
(tangibility is the opposite of abstractness).

A claim that is so broad that it reads on both statutory and non-statutory subject matter, must be amended, and if the specification discloses a practical application but the claim is broader than the disclosure such that it does not require the practical application, then the claim must be amended.

Claims that, search for and receive data, transport the information, act as recording structures, and transform the prompt are not statutory.

8. Claims 1-78 are rejected under 35 U.S.C. § 101 for nonstatutory subject matter. The specification @ page 37 cites the following definition of “wave:”

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A wave is represented mathematically as a complex function, a function defined at each point by a magnitude such as brightness, loudness or amplitude, and a phase, representing some part of the wave, such as a crest, trough, node etc. Waves are distributed phenomena. Even when they are confined, they are defined on the boundaries and everywhere within. To be complete and unique, information must be impressed on the wavefront in both amplitude and phase.

The title of the invention is: Associative Memory Device and Method based on Wave Propagation. Waves are synonymous with signals and signals are non statutory.

Applicant is encouraged to review the Interim Guidelines for Examination of Patent Applications for Patent Subject Matter Eligibility in general and specifically pages 55-57.

9. Claims 1-78 are rejected under 35 U.S.C. § 101 for nonstatutory subject matter. The claims 1-78 are generally broad and all encompassing, having the effect of attempting to patent the mathematical formula for wave propagation. Consequently, preemption is established that is subject to rejection under the Interim Guidelines for Examination of Patent Applications for Patent Subject Matter Eligibility pages 35-36.

10. Claim 1-78 are rejected under 35 U.S.C. 101 because the claimed invention lacks patentable utility. As indicated in ¶¶ 4-6 above, the claimed invention is undefined, accomplishes nothing if  $C = 0$ , is missing a major step regarding the concept of inevitableness as admitted by the applicant in the specification and the output is independent of the input.

### ***Claim Rejections - 35 USC § 112***

11. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make

and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

12. Claims 1-78 are rejected under 35 USC 112, first paragraph because current case law (and accordingly, the MPEP) require such a rejection if a 101 rejection is given because when Applicant has not in fact disclosed the practical application for the invention, as a matter of law there is no way Applicant could have disclosed how to practice the undisclosed practical application. This is how the MPEP puts it:

("The how to use prong of section 112 **incorporates as a matter of law** the requirement of 35U.S.C. 101 that the specification disclose as a matter of fact a practical utility for the invention.... If the application fails as a matter of fact to satisfy 35 U.S.C. 101, then the application also fails as a matter of law to enable one of ordinary skill in the art to use the invention under 35 U.S.C. § 112."); In re Kirk, '376 F.2d 936, 942, 153 USPQ 48, 53 (CCPA 1967) ("Necessarily, compliance with § 112 requires a description of how to use presently useful inventions, **otherwise an applicant would anomalously be required to teach how to use a useless invention.**"). See, MPEP 21107.01 (IV), quoting In re Kirk (emphasis added).

Therefore, claims 1-78 are rejected on this basis.

13. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

14. Claim 1-78 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The term arbitrary is relative and reduces the subject claims to a state of being indefinite.



***Conclusion***

15. The prior art of record and not relied upon is considered pertinent to applicant's disclosure.

- Rudolf et al, Computer modeling wave propagation with a variation on the Helmholtz-Kichhoff relation
- Yuasa et al, An autonomous decentralized recognition system having a dispersive wave property
- Grebenkin et al, A model of wave associative processing
- Elghazzawi, USPN 5,819,007
- Liu, USPN 6,012,640
- Rao, USPN 6,278,798
- Reps, USPN Pub 2002/0078431

16. Claims 1-78 are rejected.

***Correspondence Information***

16. Any inquiry concerning this information or related to the subject disclosure should be directed to the Primary Examiner, Joseph P. Hirl, whose telephone number is (571) 272-3685. The Examiner can be reached on Monday – Thursday from 6:00 a.m. to 4:30 p.m.

If attempts to reach the Examiner by telephone are unsuccessful, the Examiner's supervisor, David R. Vincent can be reached at (571) 272-3080.

Any response to this office action should be mailed to:

Commissioner of Patents and Trademarks,  
Washington, D. C. 20231;


Hand delivered to:

Receptionist,  
Customer Service Window,  
Randolph Building,  
401 Dulany Street,  
Alexandria, Virginia 22313,  
(located on the first floor of the south side of the Randolph Building);

or faxed to:

(571) 273-8300 (for formal communications intended for entry.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have any questions on access to Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll free).

  
Joseph P. Hirl  
Primary Examiner  
April 27, 2006